

REMARKS

Favorable reconsideration of this application, as amended and in light of the following discussion, is respectfully requested. Claims 11-14 and 34 are now pending in this application. Claims 1-10 and 15-33 have been canceled herein without prejudice to their reintroduction in any later-filed application(s), claims 11-14 have been amended, and new claim 34 has been added. Applicant appreciates the Examiner's indication that claim 13 would be allowable if rewritten in independent form and below presents arguments concerning the patentability of all the pending claims, as amended herein.

Claim Amendments

Applicant has amended claims 11-14 to recite, *inter alia*, that a substantial portion of at least one of the first, second, and third debosses are perforate embosses. Those amendments are supported by at least paragraphs [0075], [0080], [0085], [0087], and [0092] of the original specification. Applicant has added new claim 34, which is the same as dependent claim 13 rewritten in independent form. As such, Applicant respectfully submits that the amendments to claims 11-14 and new claim 34 do not add any prohibited new matter and asks that they be entered without objection.

Rejections Under 35 U.S.C. § 102(b)

The Office rejected claims 11-12 and 14-16 under 35 U.S.C. § 102(b) as anticipated by one or more of U.S. Design Patent No. 264,512 and U.S. Patent Nos. 5,387,385 to Murji et al., 5,383,778 to Schulz, 4,759,967 to Bauernfeind, and 4,671,983 to Burt. See Office Action at page 3-4. The Office states that those patents each

disclose an embossed web having three debosses having the alignment claimed in claims 11-12 and 14-16. *See Id.* Applicant respectfully traverses those rejections.

To anticipate a claim, a single prior art reference must either expressly or inherently teach each and every element as set forth in the claim. *See* MPEP § 2131. Amended claims 11-14 and new claim 34 now recite, *inter alia*, an embossed web product wherein at least a substantial portion of at one of the first, second, and third debosses are perforate embosses substantially oriented in the cross-machine direction. None of the references relied upon by the Office to anticipate the pending claims teach or suggest perforate embosses extending in the cross-machine direction.

U.S. Patent No. 5,387,385 to Murji et al.

Murji et al. discloses a web product having perforate embosses that extend only in the machine direction. Specifically, Murji et al. teaches that a “PERF’ operation” is conducted in a first step using “axially aligned teeth.” Col. 7. lines 35-45. Murji et al. further explains that “[t]he shearing action actually occurs between teeth 28a, 28c during intermeshing, locally perforating the fibrous web.” Col. 7, lines 47-49. As Figures 2-4 show that the teeth 28 extend in the machine direction, one of ordinary skill in the art would readily understand that the first step of Murji et al.’s ‘PERF’ operation creates perforations only in the machine direction.

As described by Murji et al., “[t]he second step of the perf-embossing operation consists of embossing the perforated pulp fluff web in the cross-direction by passing the pulp fluff web between a pair of rolls 30, 32 with intermeshing longitudinally extending flutes 34. . . . The flutes 34 imprint hinges 35 on each surface of the pulp fluff web by locally compacting the fibrous material under the effect of mechanical compression.”

Col. 8, lines 6-15. "Firstly, the lines form miniature hinges extending transversely to the pulp fluff web increasing its flexibility in the longitudinal direction. Secondly, the fiber density in the vicinity of the lines 35 is increased by virtue of the mechanical compaction necessary to form the impressions." *Id.* at lines 18-23. Those statements reveal that, unlike the first step of Murji et al.'s PERF operation that uses a "shearing action" to create perforations in the web that extend in the machine direction (see col. 7, lines 42-49), the second step does not include such a shearing action and instead compacts and densifies the web to create unperforated hinge-like lines extending in the cross-machine direction. Thus, the second step does not create perforations in the web at all.

The final step of the PERF-embossing operation consists of embossing the web in the machine direction to "create[] longitudinal lines 41 to now impart a fiber density profile of alternating high and low fiber density areas in a transverse direction of the pulp fluff web as well as providing longitudinal hinge lines." Col. 8, lines 37-46. The final structure of the web is shown in Figure 10 and "exhibits a pattern of square low fiber density zones 43 which are separated from one another by longitudinal and transverse lines 41 and 35 respectively. Slits 31 created at the first stage of the perf-embossing treatment are uniformly dispersed throughout the pulp fluff sheet." *Id.* at lines 59-61. Just like second step, the final step of the PERF operation lacks a "shearing action" and, in any event, does not create perforations, but rather compacts and densifies the web to create unperforated hinge-like lines extending in the machine direction.

The three-step perf-embossing operation of Murji et al. apparently teaches perf-embosses extending only in the machine direction, and then only by its first step—the second and third steps do not create perforations at all. Moreover, any perforating of

the first step must be in the machine direction because the embossing elements employed by Murji et al. are shaped in such a way that precludes the formation of perforations in the cross-machine direction. For example, the perf-embossing elements shown in Figures 3 and 4 are hexagonal in shape and do not include any edges extending in the cross-machine direction that could be used to perforate the web and create cross-machine direction perforations. With those teachings in mind, Applicant submits that the skilled artisan would conclude that Murji et al. does not teach the claimed web products having perforated embosses in the cross-machine direction.

Although it has been argued by the Examiner, Murji et al. also does not render obvious or suggest a web product having perforated embosses in the cross-machine direction. That reference explains that its resulting perf-embossed materials exhibit a “surprising advantage” of having high tensile strength and “have a dry tensile strength in the range from about 1 to about 3 lbs/inch in the machine direction.” Col. 9, lines 43-51. Murji further explains that the resulting products utilizing “the invention are flexible and comfortable, yet resistant to bunching, twisting, and deterioration through active use.” Col. 9, lines 64-66. But, in contradiction of those teachings, it is generally known to the skilled artisan that creating perforated embossments extending in the cross-machine direction, such as those claimed herein, may reduce machine direction tensile strength and, depending on the extent to which the sheet is perforated, could possibly result in the severing of the sheet during use. Therefore, the skilled artisan would not have been motivated to modify the teachings of Murji et al.—directed to machine direction perforations—to achieve the cross-machine direction perforations of the pending claims. Even further, Applicant submits that the skilled artisan would find that the disclosure of

Murji et al. teaches away from making such a modification because doing so may decrease the machine direction tensile strength of the product, thereby rendering it unsuitable for its intended purpose. See MPEP § 2143.01. For at least those reasons, Murji et al. also cannot render obvious the pending claims.

U.S. Patent No. 4,759,967 to Bauernfeind

Bauernfeind discloses methods for embossing paper sheets "suitable for use as bath tissues and paper towels [] wherein a majority, and preferably substantially all, of the background embossments [] have a major and minor axis and wherein the major axis is substantially aligned in the CD of the sheet." Col. 1, lines 10-12. Bauernfeind makes no mention of perforated embossments and, in fact, expressly disclaims perforated embossments by stating that it is "an object of the process not to damage the sheet by punching the embossing elements through the sheet." Col. 2, lines 67-68. As such, Bauernfeind does not teach or suggest the perforated embossments of the pending claims. Moreover, Applicant submits that the disclosure of Bauernfind recited above expressly teaches away from a web product with perforated embossments by showing the desirability of not "punching the embossing elements through the sheet." Therefore, Bauernfind neither anticipates nor renders obvious the subject matter of the pending claims.

U.S. Patent No. 5,383,778 to Schulz

Schulz teaches "a method and apparatus for modifying the strength characteristics of a paper web such that the tensile strength in the machine and cross-machine directions are more nearly equal." Col. 2, line 67 to col. 3, lines 3. Schulz

obtains such a product by using an embossing roll having protrusions where “[s]elected portions of the protruding members have a height which is sufficient to fracture fibers running in the machine direction of the web, thereby weakening the tensile strength in the machine direction.” Col. 3, lines 43-46. “A reaction roll or back-up roll is provided which includes an elastic or resilient outer surface for urging the web against the embossing roll such that the elastic surface flows into the engraved portions...with [] selected portions embossed deeply enough to fracture fibers running in the longitudinal or machine direction of the web. Col. 3, lines 51-60.

The claimed perforate embossments are made, for example, by passing a web between two hard embossing rolls having paired embossing elements that define a nip. As the web passes through the nip, the paired embossing elements shear substantially all of the fibers along the length of the nip. In contrast, Schulz discloses one hard embossing roll paired with a resilient backing roll that act in concert to weaken the tensile strength of a web in the machine direction by fracturing selected fibers through “urging the web against the embossing roll.” Schulz further teaches that the incline of the side wall portions of the embossing elements may be adjusted “such that the vertical portions have a greater tendency to fracture fibers of the web which extend in the machine direction.” Col. 3, lines 60-66. That passage clearly indicates that some fibers will tend to fracture, while some will tend not to fracture. Thus, Schulz does not teach perforate embossments and, instead, simply teaches how to emboss a web while at the same time reducing the tensile strength of the web in the machine direction by fracturing some, but not all, of the fibers pinched between the embossing elements and the resilient backing roll.

Schulz further teaches that the height and sharpness of the edge (or corner) of the embossing element “may result in unacceptably large penetration into the web and possibly tearing. Unacceptably large penetration may be avoided by rounding the corner or forming a more flattened corner.” Col. 6, lines 40-44. That passage provides further evidence that Schulz is directed to weakening the tensile strength of a web in the machine direction by fracturing selected fibers, rather than, for example, shearing the web across the length of a nip to create a web with perforate embosses. Moreover, the embossing elements of Schulz shown in Figures 4A, 4B, and 4C exhibit relatively flat top surfaces designed to emboss the web and do not include, for example, a sharp blade-like structure that could be used to shear all of the fibers passed through a nip between the embossing element and the resilient backing roll. As such, Schulz cannot anticipate the pending claims.

With those teachings in mind, Applicant also submits that Schulz teaches away from the claimed perforate embosses, such that it cannot render the pending claims obvious. Schulz clearly indicates that using embossing elements of a certain height and sharpness can result in “unacceptably large penetration into the web and possibly tearing.” Accordingly, Applicant submits that Schulz fails to teach or suggest the claimed web having perforate embosses substantially oriented in the cross-machine direction and, thus, the pending claims are not unpatentable over that reference.

U.S. Patent No. 4,671,983 to Burt

Burt discloses a method and apparatus for embossing a roll of material while avoiding nesting. See col. 1, lines 7-10. In describing the embossment pattern, Burt states that “[t]he smooth and rounded configuration of each of these projections along

with the generally conical shape of the projections facilitates the impression of the embossment pattern in roll material such as paper towels." Col. 4, lines 16-19.

Applicant submits that Burt's smooth and rounded projections are unsuitable for creating a web with the claimed perforate embosses that may result, for example, from a shearing action between closely spaced embossing elements. Furthermore, the disclosure of Burt is directed to a unique embossing pattern that avoids nesting and it makes no mention of perforate embosses. As such, Applicants submit that Burt does not teach or suggest a web with the claimed perforate embosses.

U.S. Design Patent No. 264,512 to Rogers

Rogers discloses an embossing design with embossments extending in the machine and cross-machine directions. Rogers does not disclose perforate embosses. Moreover, the drawings are not drawn to scale and are insufficient by themselves to make any determination whether the embossments are perforated. See MPEP § 2125. Accordingly, Rogers does not teach or suggest the subject matter of any of the pending claims. The reference simply relates to a design patent for tissue material and has nothing to say about whether the bosses are perf-embossed or conventional. Such an ambiguous reference cannot properly support either an anticipation or an obviousness rejection of the pending claims.

Conclusion

Claims 11-14 have been amended herein, claims 1-10 and 15-33 have been canceled, and claim 34 has been added. In view of the foregoing amendments and remarks, Applicant respectfully requests the continued examination of this application

and the timely allowance of all pending claims. Should the Office continue to believe that all the claims presented this application are not in condition for allowance, or should the Office have any questions or wish to discuss any position presented in this paper, Applicant requests that the Office contact the undersigned representative to discuss an appropriate resolution.

Please grant any extensions of time required to enter this response and charge any additional required fees to our Deposit Account No. 06-0916.

Respectfully submitted,

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